1.1 Radio Astronomy

1.1.1 Maintenance and Calibration

- MarkIV VLBI recorders maintenance: performed two successful headstack calibrations on recorder#2. It was found that read headstack had moved significantly with respect the position measured at previous calibration. This read headstack problem caused the failure of the recording tests before 08CS117 support, but it did not prevent to properly record the data. After replacing the remote control board and the adjacent board by the ones from recorder#1, the footage display and "et" problems were solved.
- K-band DSS-63 downconverters maintenance: found and fix a problem with MMS#1 (modular measurement system) fan.
- The Q-band receiver configuration at DSS-54 antenna is being documented at http://dsnra.jpl.nasa.gov.
- In preparation for EVN and Global Services (EGS) observation in K-band, observing files were generated locally, Mark5 modules received from JIVE correlator were conditioned, and performance of the overall K-band receiving system was checked.

1.1.2 Research and Development

Performed observing tests with the Wide band VLBI science receivers (WVSR) for large bandwidth spectroscopic observations.

CGM attended "The Fourth Workshop on Compact Steep Spectrum and GHz-Peaked Spectrum radio sources" in Riccione, Italy, 26-29 May. At the meeting it was shown the potential use of the Wide band VLBI science receivers (WVSR) as powerful and flexible spectrometers.

1.1.3 Observations

1.1.3.1 Host Country Spectroscopy

During this month spectroscopy observations with DSS-63 antenna were carried out using the SPB500 spectrometer and the MarkIV data acquisition terminal. The WVSR was used in parallel for testing purposes in frequency switching mode. Following Host Country projects were performed with DSS-63 antenna:

- **D63-S02:** search for water maser emission toward obscured planetary nebulae. Performed during bad weather conditions.

- **D63-S05:** study of ammonia (NH3) emission toward massive young stellar objects. The sample consists of regions in different evolutionary stages, and NH3 will be used to determine the physical properties of the dense gas at each evolutionary stage. Position switching mode was used.

DOY	minutes scheduled	minutes used	Percent good data	Activity	comments
135	295	295	40	"GBRA Host Country D63-S05"	Freq switch tests
147	640	490	24	"GBRA Host Country D63-S02"	receiver problems

1.1.3.2 Interferometry

MDSCC participated in 6 Very Long Baseline Interferometric (VLBI) observations (1355 min in total):

- RFC Clock Synchronization on DSS-65 (6 observations; 1355 min): 100% data collected, performance of the system nominal, except for observation on DOY 125 that was impacted by a power outage (DR#M104822, 53% lost, 9% degraded) and for the observation on DOY 150, affected by an antenna problem (DR#M104865, 2 sources lost, 3% lost); For first supports "et" commands from Field System application did not reach the MarkIV VLBI recorder, and tape was stopped manually after every scan. No problems experienced with Mark5 recording in piggyback mode.